Application for a Commercial Class II Injection Well Permit

It is Region 5 policy that an operator of a Class II injection well which accepts oil and gas production related fluids from oil or gas production wells owned or operated by other Class II operators must have a commercial Class II permit. There are a few distinctions between commercial and non-commercial Class II permits. The commercial Class II requirements which differ from those of non-commercial Class II permits include:

- Restrictions on injected fluids, approval of new sources and exceptional circumstances [Part I(E)(18)]
- Construction of a fence surrounding the commercial well which can be locked so as to preclude unauthorized access to the well [Part II(A)(5)];
- Restriction of fluids injected to a list approved by USEPA for injection into the commercial well and contained in the permit [Part III(D)];
- Submission of the brine manifest records (or equivalent information) associated with hauling brine to the well [Part II(B)(3)]; and
- Submission of quarterly analyses of samples taken from the location identified in the permit [Part II(B)(3)] for the normal brine constituents:
    - sodium, calcium, total iron, magnesium, barium, sulfate, chloride, bicarbonate, carbonate, sulfide, total dissolved solids, pH, resistivity, and specific gravity;

An owner/operator applying for a new (proposed) commercial permit must include the following information with the permit application:

1. Information regarding site security;
2. Brine analysis, locational information, field name* and formation name for each source known at the time of the application.

An owner/operator applying for modification of a non-commercial permit to a commercial permit must submit the following information:

1. Request for change in writing;
2. Current list of landowners within the one-quarter mile area of review (AOR) of the site (for the public notice**);
3. Information regarding site security
4. Brine analysis, locational information, field name* and formation name for each source known at the time of the request for modification;
5. Information on any wells drilled within the AOR since the original permit was issued.

* The field name can be found from the Michigan Department of Environmental Quality (MDEQ) Oil and Gas Information System by searching for the permit number of the well(s) which will provide the fluids for disposal. You may also contact the MDEQ via its webpage.

** Conversion of a permit from non-commercial to commercial requires a major permit modification, which includes public notice and a thirty-day public comment period.

Adding new sources for commercial disposal under an effective commercial Class II permit

Once a commercial Class II permit is effective, operators may add additional sources for disposal into the permitted well by completing the following steps:

1. Submitting a request to minor-modify the permit (each commercial Class II permit has an attachment which lists all sources approved for injection);
2. Submitting sample results obtained from the newly-proposed source , which includes for each (normal brine constituents):
    - sodium, calcium, total iron, magnesium, barium, sulfate, chloride, bicarbonate, carbonate, sulfide, total dissolved solids, pH, resistivity, and specific gravity;
3. Field name*, location (Township, Range, Section) and formation name of newly-proposed source.

Assuming that there are no problems associated with the permit modification request, the UIC Branch will modify the permit by adding the new source to the list of approved sources. This normally takes less than 5 business days from date of receipt of a complete permit modification request. The permittee may not inject fluids from the new source until the modification to the permit is effective.

Maximum Injection Pressure

As a reminder to operators, permit conditions in Class II UIC permits are established at the time the application is reviewed and the final permit issued. It is UIC Branch's policy when calculating maximum injection pressure (MIP) for Class II commercial wells to use the specific gravity of the heaviest brine from the various approved sources of fluids because the maximum injection pressure is dependent on the specific gravity. As you can see in the equation below, the allowable pressure decreases with an increase in specific gravity. Therefore, any proposed new source with a specific gravity higher than the value used to calculate the permitted MIP will require a recalculation of the MIP using the higher specific gravity. This revised MIP will be incorporated into the permit by a minor permit modification to reflect the appropriate reduction in the maximum injection pressure.

The default formula used by Region 5 to calculate the surface MIP is:

MIP_{surf} = {[FG - 0.433 psi/ft x (SG + 0.05)] x (depth)} - 14.7 psig

where: FG = the fracture gradient in units of pounds per square inch (psi) per foot; 0.8 is the default for Class II disposal wells if no additional information is submitted to establish a different value.

0.433 = density of fresh water in units of pounds per square inch per foot

SG = the specific gravity

Depth = depth of the top of the injection zone (ft)

0.05 = safety factor

14.7 = conversion factor from absolute pressure in units of psi-absolute (psia) to gauge pressure in units of psi-gauge (psig)